

AMENDMENTS TO THE CLAIMS

1. (Currently amended) An apparatus for treating pollutants in a gas ~~and~~ comprising:
 - a gas flow tube carrying a flow of gas to be treated ~~and~~ comprising a sidewall having an opening therein; and
 - a source of hydrogen peroxide;
 - a treatment injector connected to the opening in the sidewall of said gas flow tube for creating and injecting dissociated hydrogen peroxide into the flow of gas to be treated, said treatment injector comprising
 - an injector housing having an inlet, an outlet and a hollow interior extending therebetween, the inlet being connected in fluid communication with said source of hydrogen peroxide so that hydrogen peroxide flows through the hollow interior and toward the outlet, and
 - at least one ultraviolet (UV) lamp positioned within the hollow interior of said injector housing for dissociating hydrogen peroxide flowing therethrough so that the dissociated hydrogen peroxide is injected into the flow of gas from the outlet for treating pollutants.
2. (Original) An apparatus according to Claim 1 wherein the pollutants include nitrogen oxides; and further comprising a scrubber connected to said gas flow tube downstream from said treatment injector for removing reaction products of nitrogen oxides with the dissociated hydrogen peroxide.
3. (Original) An apparatus according to Claim 1 further comprising an air source connected in fluid communication with the inlet of said injector housing.
4. (Original) An apparatus according to Claim 1 further comprising a heater carried by said injector housing.
5. (Original) An apparatus according to Claim 1 wherein the outlet is connected in fluid communication with the opening in the sidewall of said gas flow tube.
6. (Original) An apparatus according to Claim 1 wherein said injector housing extends through the opening in the sidewall of said gas flow tube.

7. (Original) An apparatus according to Claim 1 wherein said injector housing has a generally tubular shape.
8. (Original) An apparatus according to Claim 7 wherein said at least one UV lamp has an elongate shape and is oriented generally parallel to the tubular shape of said injector housing.
9. (Original) An apparatus according to Claim 7 wherein said at least one UV lamp has an elongate shape and is oriented transverse to the tubular shape of said injector housing.
10. (Original) An apparatus according to Claim 1 further comprising a UV reflective coating on an interior of said injector housing.
11. (Original) An apparatus according to Claim 1 further comprising a boric acid coating on an interior of said injector housing.
12. (Original) An apparatus according to Claim 1 further comprising at least one cooling fan associated with said at least one UV lamp.
13. (Currently amended) An apparatus according to Claim 1 wherein the flow of gas to be treated comprises a flue gas.
14. (Original) An apparatus according to Claim 1 wherein the flow of gas to be treated is from a stationary source.
15. (Currently amended) An apparatus for treating pollutants in a flue gas from a stationary source ~~and~~ comprising:
a gas flow tube carrying a flow of flue gas from the stationary source ~~and~~ comprising a sidewall having an opening therein; and
a source of hydrogen peroxide; and
a treatment injector for creating and injecting dissociated hydrogen peroxide into the flow of flue gas from the stationary source, said treatment injector comprising
an injector housing external to said gas flow tube and having an inlet, an outlet and a hollow interior extending therebetween, the inlet being connected in fluid communication with said source of hydrogen peroxide and the

outlet being connected in fluid communication with the opening in the sidewall of said gas flow tube so that hydrogen peroxide flows through the hollow interior and toward the outlet,

at least one ultraviolet (UV) lamp positioned within the hollow interior of said injector housing for dissociating hydrogen peroxide flowing therethrough so that the dissociated hydrogen peroxide is injected into the flow of gas from the outlet for treating pollutants; and

a scrubber connected to said gas flow tube downstream from said treatment injector for removing reaction products of pollutants with the dissociated hydrogen peroxide.

16. (Original) An apparatus according to Claim 15 further comprising an air source connected in fluid communication with the inlet of said injector housing.

17. (Original) An apparatus according to Claim 15 further comprising a heater carried by said housing.

18. (Original) An apparatus according to Claim 15 wherein said injector housing has a generally tubular shape.

19. (Original) An apparatus according to Claim 18 wherein said at least one UV lamp has an elongate shape and is oriented generally parallel to the tubular shape of said injector housing.

20. (Original) An apparatus according to Claim 18 wherein said at least one UV lamp has an elongate shape and is oriented transverse to the tubular shape of said injector housing.

21. (Currently amended) An apparatus for treating pollutants in a flue gas from a stationary source ~~and comprising:~~

a gas flow tube carrying a flow of flue gas from the stationary source ~~and comprising a sidewall having an opening therein; and~~

a source of hydrogen peroxide; and

a treatment injector for creating and injecting dissociated hydrogen peroxide into the flow of flue gas from the stationary source, said treatment injector comprising:

an injector housing extending through the opening in the sidewall of said gas flow tube, said injector housing having an inlet, an outlet and a hollow interior extending therebetween, the inlet being connected in fluid communication with said source of hydrogen peroxide so that hydrogen peroxide flows through the hollow interior and toward the outlet, at least one ultraviolet (UV) lamp positioned within the hollow interior of said injector housing for dissociating hydrogen peroxide flowing therethrough so that the dissociated hydrogen peroxide is injected into the flow of gas from the outlet for treating pollutants; and

a scrubber connected to said gas flow tube downstream from said treatment injector for removing reaction products of the pollutants with the dissociated hydrogen peroxide.

22. (Original) An apparatus according to Claim 21 further comprising an air source connected in fluid communication with the inlet of said injector housing.

23. (Original) An apparatus according to Claim 21 further comprising a heater carried by said housing.

24. (Original) An apparatus according to Claim 21 wherein said injector housing has a generally tubular shape.

25. (Original) An apparatus according to Claim 24 wherein said at least one UV lamp has an elongate shape and is oriented generally parallel to the tubular shape of said injector housing.

26. (Original) An apparatus according to Claim 24 wherein said at least one UV lamp has an elongate shape and is oriented transverse to the tubular shape of said injector housing.

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Currently amended) A method for treating pollutants in a flow of gas carried by a gas flow tube using a hydrogen peroxide source, the method comprising the steps of:

coupling a treatment injector between the hydrogen peroxide source and the gas flow tube, the treatment injector comprising an injector housing having an inlet, an outlet and a hollow interior extending therebetween, the inlet being connected in fluid communication with the source of hydrogen peroxide, the treatment injector further comprising at least one ultraviolet (UV) lamp positioned within the hollow interior of the injector housing; and

flowing hydrogen peroxide through the hollow interior of the injector housing and toward the outlet while operating the at least one UV lamp to dissociate hydrogen peroxide so that dissociated hydrogen peroxide is injected into the flow of gas from the outlet for treating pollutants in the flow of gas.

37. (Currently amended) A method according to Claim 36 further comprising the step of scrubbing reaction products of pollutants with the dissociated hydrogen peroxide from the flow of gas downstream from the treatment injector.

38. (Currently amended) A method according to Claim 36 further comprising the step of delivering a flow of air to the inlet of the injector housing.

39. (Currently amended) A method according to Claim 36 further comprising the step of heating hydrogen peroxide with the injector housing.

40. (Currently amended)
comprises a flue gas.

A method according to Claim 36 wherein the flow of gas

41. (Original)
from a stationary source.

A method according to Claim 36 wherein the flow of gas is